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**Guidelines for risk assessment and reduction for collaborative
safety system of low voltage electrical equipment**

低压电气设备协同安全系统风险评估和降低指南

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Table of Contents

Preface	III
Introduction	IV
1 Scope	1
2 Normative references	1
3 Terms and Definitions	1
4 General Principles	2
5 Basic Process	3
5.1 Basic Process of Collaborative Safety System Risk Assessment and Mitigation	3
5.2 General considerations for the electrical equipment risk assessment process	3
6 Determine the restriction conditions	4
6.1 Personnel	4
6.2 Electrical equipment	4
6.3 Operating Environment	4
6.4 Collaborative Process	4
7 Hazard Identification	5
7.1 Personnel	5
7.2 Electrical equipment	5
7.3 Operating Environment	6
7.4 Collaborative Process	6
8 Risk Assessment	6
9 Risk Assessment	6
10 Risk reduction	7
10.1 Personnel	7
10.2 Electrical equipment	7
10.3 Operating Environment	8
10.4 Collaborative Process	8
11 Verify and document	8
References	9

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for

standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

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Introduction

With the widespread promotion and application of emerging technologies such as robots, artificial intelligence, and the Internet of Things in different scenarios and tasks of electrical equipment, personnel The interconnection mode of electrical equipment has been updated and changed. Human-machine collaboration has been proposed as a new type of human-machine relationship.

security) also faces new challenges.

Introducing risk assessment in human-machine collaborative work scenarios helps to identify hazards, assess risk levels, and propose risk reduction measures.

Etc., solve the problem at the bud and achieve the goal of improving the safety level.

Human-machine collaboration exists in a certain scenario or a certain task. Different scenarios and tasks have different safety requirements, and the dangers and risks caused by them are also different.

The basis for determining risk and risk level is also different. This document aims to provide guidance by providing the basic process and considerations for risk assessment and reduction.

Stakeholders should carry out risk assessment and reduction on the low-voltage electrical equipment collaborative safety system in a targeted manner based on specific scenarios and tasks, so as to achieve Safe interaction and collaboration of new human-machine relationships will improve the safety level of low-voltage electrical equipment.

Risk assessment and control of low voltage electrical equipment collaborative safety systems Lowering Guide

1 Scope

This document establishes the general principles for risk assessment and reduction in a collaborative safety system, and provides the basic process, judgment and Information such as constraints, hazard identification, risk estimation, risk assessment, risk reduction, verification and documentation.

This document is applicable to the application of low voltage electrical equipment with AC voltage of 1000V and below and DC voltage of 1500V and below.

Conduct collaborative safety system risk assessment and reduction activities for scenarios (and/or missions).

Note. The low voltage electrical equipment covered by this document includes.

- Electrical equipment that provides perceptible information through a human-machine interface;
- Electrical equipment used by robots that interact with humans, etc.

2 Normative references

GB/T 4025

GB/T 4026

GB/T 4205

GB/T 4208

GB 19517

GB/T 25295

GB/T 29481

GB/T 33980

GB/T 34924-2024

GB 39800.1

3 Terms and definitions

The terms and definitions defined in GB/T 34924-2024 and the following apply to this document.

3.1

An entity consisting of personnel, low-voltage electrical equipment, and operating environment that work together to perform tasks and be protected from unacceptable risks.

Note. Low voltage electrical equipment in this document is referred to as "electrical equipment".

3.2 Risk

A combination of the probability of an injury occurring and the severity of the injury.

[Source. GB/T 34924-2024, 3.1.18]